a semiconductor body having a high voltage region with the high voltage semiconductor component and having an edge region of said high voltage region, a high voltage resistant structure at said edge region having at least one inner zone of a first conductivity type adjacent to a first surface of said semiconductor body;

at least one floating guard ring of a second conductivity type arranged in said inner zone, said at least one floating guard ring surrounding the high voltage region; and

inter-ring zones of said first conductivity type respectively arranged in said inner zone, said inter-ring zones being allocated in pairs to each of said floating guard rings, said inter-ring zones being arranged laterally such that they separate two respective consecutive floating guard rings from one another,

wherein at least one of said floating guard rings and said inter-ring zones have at least one of conductivities and geometries set such that their free charge carriers are totally depleted when a blocking voltage is applied.

20.(Amended) The high voltage semiconductor component as claimed in claim 16, wherein said floating guard rings have one of a U-shaped or V-shaped cross-section.

21.(Amended) The high voltage semiconductor component as claimed in claim 16, further comprising:

at least one space charge zone stopper located at an outermost edge of said edge region of said semiconductor component.

22.(Amended) The high voltage semiconductor component as claimed in claim 21, wherein said space charge zone stopper comprises a heavily doped region of said first conductivity type, said heavily doped region being arranged in said inner zone.

23.(Amended) The high voltage semiconductor component as claimed in claim 21, wherein said space charge zone stopper comprises a damage implanted region being arranged in said inner zone.

24.(Amended) The high voltage semiconductor component as claimed in claim 21, wherein said space charge zone stopper comprises an electrode connected to said inner zone, said electrode being one of metallic or containing polysilicon.

25.(Amended) The high voltage semiconductor component as claimed in claim 16, further comprising:

at least one magnetoresistor located at an inner edge of said edge region of said semiconductor component.

26.(Amended) The high voltage semiconductor component as claimed in claim 25, wherein at least one of said magnetoresistors is simultaneously a gate electrode of said semiconductor component.

27.(Amended) The high voltage semiconductor component as claimed in claim 25, wherein at least an outermost of said magnetoresistors is nearly completely enclosed by a cathode metallization in a direction of said first surface of said semiconductor component.

28.(Amended) The high voltage semiconductor component as claimed in claim 27, wherein said cathode metallization is a metallization of a source electrode of said semiconductor component.

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29.(Amended) The high voltage semiconductor component as claimed in claim 16, wherein said inter-ring zones in said edge region have a cross-section tapered to said first surface.

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30.(Amended) The high voltage semiconductor component as claimed in claim 16, wherein said semiconductor component is one of a vertical power transistor or an IGBT.

Add new claim 31 as follows:

31. A semiconductor chip, comprising:

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a substrate having a major surface;

at least one high voltage semiconductor component in said substrate;

an edge structure at an edge of said high voltage semiconductor component, said edge structure separating a high voltage portion of said substrate from a low voltage portion of said substrate, said edge structure including:

at least one inner zone of a first conductivity type defining a ring structure around said at least one high voltage semiconductor component at said major surface;

floating guard rings of a second conductivity type arranged in said at least one inner zone; and

inter-ring zones of said first conductivity type arranged in said at least one inner zone, said inter-ring zones being allocated in pairs to each of said floating guard rings, said inter-ring zones being arranged laterally so as to separate two respective consecutive floating guard rings from one another,

at least one of said inter-ring zones and said floating guard rings being of a at least one of a conductivity and a geometry such that their free charge carriers are totally depleted when a blocking voltage is applied.

Add new claim 32 as follows:

32. A semiconductor chip, comprising:

a substrate having a major surface;

a plurality of high voltage semiconductor components in said substrate;

an edge structure at an edge of said plurality of high voltage semiconductor components to separate said high voltage semiconductor components from a remainder of said substrate, said edge structure including:

at least one inner zone of a first conductivity type defining a ring structure around said plurality of high voltage semiconductor components at said major surface;

at least one floating guard ring of a second conductivity type arranged in said at least one inner zone; and

inter-ring zones of said first conductivity type arranged in said at least one inner zone, said inter-ring zones being allocated in pairs to each of said at least one floating guard ring, said inter-ring zones being arranged laterally so as to separate two respective consecutive floating guard rings from one another,

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at least one of said inter-ring zones and said at least one floating guard ring being of a at least one of a conductivity and a geometry such that their free charge carriers are totally depleted when a blocking voltage is applied.

IN THE DRAWINGS

Submitted herewith a is a Submittal of Formal Drawings.